

To accomplish unification, we may have to:

- Understand what quantum mechanics is.
- Recognize the photon as the irreducible constituent of vacuum variation.
- In lieu of a well-defined graviton, examine coincidence.
- Allow for a new violation of a classical law.

Hello, my name is Nathan Frick. Here is what I suspect is a path to grand unification of physics.

Quantum mechanics states that when we look at the small, things are blurry - and it's not due to our faulty instruments. The photon has wave-particle duality and is the gauge boson responsible for electrodynamic interaction. The vacuum is not static, but teems with activity.



John Wheeler, in his autobiography, said, *"Some are uneasy because the Copenhagen interpretation sweeps away certainty from the core of physics, replacing it with uncertainty. That's what Einstein couldn't accept. I am uneasy for a different reason. I see no bedrock of logic on which quantum mechanics is founded. What is the underlying reason for quantum mechanics? I keep asking myself. It has to flow from something else, and that something else remains to be found."*

What I propose

1. The quantum fourth dimension can be defined as energy-time (i.e. action)
2. The photon confines an oscillating curvature of space, and locally oscillating space may provide an explanation for quantum mechanics.
3. Photons in QED do not always reach distant matter, but rarely collide and annihilate, creating static vacuum!
4. This separation of the dynamic vacuum by a static instance creates lower effective entropy, providing the mechanism for the gravitational interaction (see Figure 1).

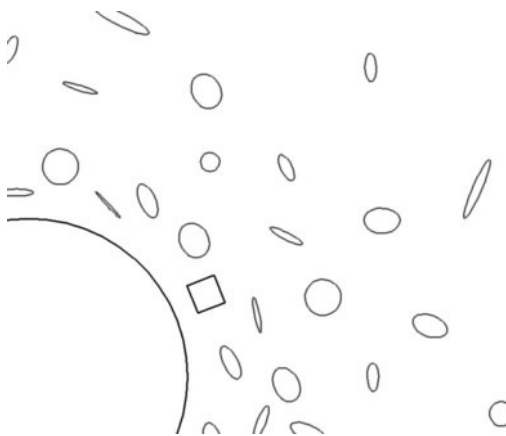


Figure 1. Schematic showing separation of vacuum by static instance. The large circle represents matter, and the small circles are intended to represent photons in traverse. **Space is "blurry" except in the case of the annihilation** (represented by the square).

Annihilation Diagram (time²)

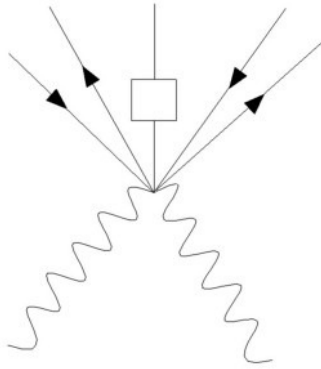


Figure 2. One photon here is assumed to be from distant matter. The square indicates a dummy particle, representing (flat) perfect vacuum. The fermions shown are unclassified by-product particles, presumably of different momentum magnitude.

Implications

- Gravitation may occur at several points in space between masses. (I call this “collateral gravitation”).
- Violation of the second law of thermodynamics occurs at the quantum level.
- No well-defined boson exists for gravitation, except that which appears stochastically.
- Anomalies may exist for free neutrons and other uncharged particles !
- On first order, any waves will be embedded in electromagnetic waves.

Hueristic Photon Metric

The self-intersecting torus is a good choice by simple extension. Planck's constant serves as a conversion factor between energy-time and a degree of freedom. A complexified space aids in mathematical exploration, and study of geodesics may lead to classical correspondence.

$$\langle x, y, z, Et \rangle = \langle P(i\beta e^{-i\alpha} - (1+i) \cos v) \cos u, P(i\beta e^{-i\alpha} - (1+i) \cos v) \sin u, P(1+i) \sin v, \hbar\alpha \rangle$$

Figure 3. My equation for the (S x S x S) complexified spindle torus (z-axis rotation only), derived from setting ring radius = $P \cos(\alpha)$. Alpha is the dilation angle parameter, measured here from center of the torus. P is the radial component. Note here that whatever the origin of the metric, the sphere (flat space) exists at some instance between (and including) real and imaginary space.

Beta is a decreasing function of radial component P (and probably momentum), but whether a singularity is allowed should be verified by the connection and correspondence.

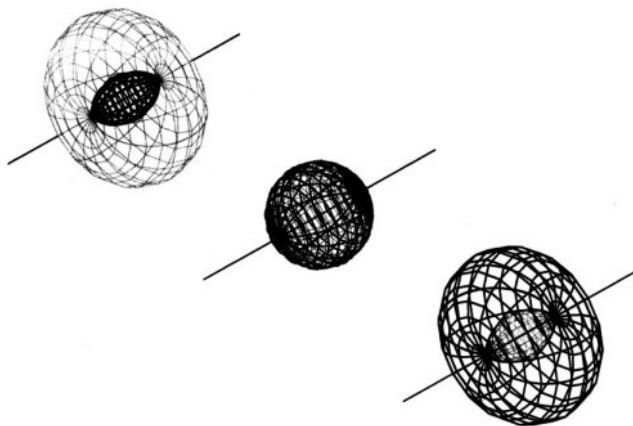


Figure 4. The spindle torus in various dilation states (negative ring radius is here allowed).

Opportunity for Development and Tests

- The projection of the photon may be a suitable mathematical basis for a future recast of the Standard Model and scattering processes.
 - Simulations of collateral gravitation should be used to study n-body diffusion.
 - Experiments with free uncharged particles, beta decay, and polarization should be attempted somehow.
 - The gravitational interaction and fermion reorganization may be examined as a symmetry breaking, external to QM.
 - Other explorations could include photon phase in Bose-Einstein statistics, Noether's theorem, etc.
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My gaddress is spindletorus, but please don't send me an angry note about general relativity, gravitons, etc. Furthermore, I am studying, and I may be unavailable for much dialog.